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Artificial Intelligence Patents: Reflections on Recent U.S. v. EU v. UK Approaches

By [Jason Raeburn](#) and [Natalie Coulton](#)

The rapid increase in innovation and popularity surrounding AI, its capabilities and seemingly endless applications has created a technological revolution, the magnitude of which hasn't been seen for decades. This has led to a similarly overwhelming surge in patent applications being filed that relate to this incredibly diverse technology. Not only have patentees sought to protect inventions related to AI technology itself, but many inventions are being devised or developed with the assistance of AI.

Intellectual property offices across the world ("IPOs") are, of course, very familiar with navigating the technical contributions realised, or which arise in connection with software. However, AI-related inventions raise new, complex and fundamental questions on inventorship and patentability that IPOs (and courts) have been required to tackle head-on.

As the UK Court of Appeal's 19 July 2024 [decision](#) in the *Emotional Perception AI* case illustrates, the potential for patent protection to extend to AI-related inventions is not as straightforward as one might think. In issuing its judgment, the Court of Appeal overturned the High Court's decision, which was based on a finding that the unique features of artificial neural networks ("ANNs") are sufficient to avoid them falling within the exclusion on patenting computer programs per se. Following a finding that Emotional Perception's AI tool was a "computer program", the UK Court of Appeal then considered whether the invention made a "technical contribution" beyond just being a computer program, sufficient to be patentable and held that it did not. In response to this Court of Appeal decision, the UK IPO is now making immediate changes to its practice for examining AI-related patents that claim ANNs, which underscores the dynamic nature of this space.

With its 16 July 2024 release of its [guidance](#) on how artificial intelligence ("AI") will be dealt with from a subject matter eligibility perspective in patent applications ("US Guidance"), the U.S. Patent and Trademark Office ("USPTO") has now provided a key piece of the puzzle. The U.S. Guidance is, to an extent, aligned with both the UK Intellectual Property Office's [guidance](#) released in May 2024 ("UK Guidance") and the European Patent Office's [guidance](#) released in March 2024 ("EU Guidance"), meaning patentees now have substantive indications from three of the key IPOs on how they plan to approach AI-related inventions. We summarise below some of the key considerations tech and life sciences patentees should be aware of.

Summary of the U.S. Guidance and its application to AI inventions

It should be noted that the U.S. Guidance is intended to apply to innovations in "critical and emerging technologies", so it applies to a wider scope of inventions beyond AI-related inventions. The U.S. Guidance is expressly intended to be used alongside the [Manual of Patent Examining Procedure](#) ("MPEP") to assist examiners in assessing subject matter eligibility. Three new examples, aimed at assisting USPTO personnel in applying the new guidance have also been included.

Background to the U.S. Guidance

In line with [Executive Order 14110](#) issued by President Biden on 30 October 2023 (the “Executive Order”), the aim of the U.S. Guidance is to promote responsible innovation, competition and collaboration, with the hope that this will encourage AI inventors to use the U.S. as a base for the development, exploitation and commercialisation of the technology’s exciting potential. Interestingly, the Executive Order seemed to indicate that the underlying intention of the Order was to ensure the U.S. was a patentee-friendly jurisdiction for AI inventions, emphasising the need to “*protect inventors and creators*”.

This U.S. Guidance is the latest chapter in an evolving assessment that began as early as August 2019, when the USPTO issued a request for comments on patenting AI inventions and compliments the USPTO’s previously published guidance on “[Inventorship Guidance for AI-Assisted Inventions](#)” (13 February 2024) and the “[Guidance on Use of Artificial Intelligence-Based Tools in Practice Before the United States Patent and Trademark Office](#)” (11 April 2024).

USPTO Subject Matter Eligibility and AI

This latest U.S. Guidance also follows several recent initiatives by the USPTO to clarify the patent subject matter eligibility requirements, which began in 2019 with guidance issued to assist with identifying abstract ideas and determining whether a claim is directed to a judicial exception (i.e. laws of nature, natural phenomena and abstract ideas), which are not patentable subject matter. In addition, the USPTO has issued 46 distinct examples which cover various different fact patterns covering a wide variety of technologies (including AI, biotechnology and software) which are designed to assist USPTO personnel and stakeholders in evaluating subject matter eligibility.

Later in October 2020, the USPTO published its report titled “[Public Views on Artificial Intelligence and Intellectual Property Policy](#)” in which it was noted that a majority of stakeholders who provided input agreed that “*AI is viewed best as a subset of computer-implemented inventions*” and that this majority “*felt that current USPTO guidance, especially on patent subject matter eligibility and disclosure of computer-implemented inventions, is equipped to handle advances in AI*”. However, in a further report published in June 2022 and titled “[Patent eligible subject matter: Public views on the current jurisprudence in the United States](#)” it was noted that some interested parties had expressed concerns about the uncertainty and unpredictability in the law with respect to subject matter eligibility of AI and emerging technologies.

Section II of the U.S. Guidance provides an overview of the USPTO’s existing patent subject matter eligibility guidance, which is not covered in this article. This is followed by Section III, which provides the USPTO’s specific guidance on two key questions that are particularly relevant to AI inventions:

1. Whether a claim recites an abstract idea; and
2. Whether a claim integrates a recited judicial exception into a practical application because the claimed invention improves the functioning of a computer or another technology or technical field.

This is particularly important, because an abstract idea will not be patentable under U.S. law, but a claim that integrates a judicial exemption into a practical application by improving the function of a computer or other technology or technical field will be patentable.

Section IV of the U.S. Guidance provides further updates on AI-assisted inventions before Section V announces a further three examples that are intended to assist examiners in applying the subject matter eligibility guidance to AI inventions during patent examination.

Example 47 illustrates the application of the analysis to claims reciting limitations specific to AI, in particular the use of artificial neural networks to identify and detect anomalies in a dataset. Example 48 illustrates the application of the eligibility analysis to claims reciting AI-based methods of analysing speech signals and removing background noise from desired speech. Finally, Example 49 illustrates the application of the analysis to method claims reciting an AI model designed to assist in personalising medical treatment to the individual characteristics of a particular patient.

Importantly, the U.S. Guidance is not intended to announce any new USPTO practice or procedure, but rather is aimed at explaining how the existing subject matter eligibility rules are to be applied to AI inventions.

Does a claim recite an abstract idea?

In Section III.A.1 of the U.S. Guidance, a distinction is drawn between a claim that “recites” an abstract idea (which will require further eligibility analysis) and a claim that merely involves, or is based on, an abstract idea. Under the MPEP, examiners are directed to use the following 2 step process to determine whether a claim recites an abstract idea:

1. Identify the specific limitation(s) in the claim under examination that the examiner believes recite an abstract idea; and
2. Determine whether the identified limitation(s) fall within at least one of the groupings of abstract ideas distilled from the relevant case law (with the most relevant groupings for AI inventions likely to be mathematical concepts, certain methods of organising human activity, or mental processes).

The U.S. Guidance provides three additional hypotheticals designed to assist with understanding this distinction, each of which is intended to be an example of a claim that does not recite an abstract idea before providing a deeper analysis on each of the more relevant groupings of abstract ideas that may apply to AI inventions.

Does a claim integrate the judicial exception into a practical application of that exception?

If it is found that a claim recites a judicial exception, then U.S. examiners are required to evaluate whether the claim in question integrates the recited judicial exception into a practical application of the exception, and thus is not “directed to” the judicial exception. This is to be evaluated through a further 2-step process, whereby examiners must:

1. Identify whether there are any additional elements recited in the claim beyond the judicial exemption(s); and
2. Evaluate those additional elements individually and in combination to determine whether they integrate the exception into a practical application of that exception.

As explained in Section III.A.2 of the U.S. Guidance, applying this analysis to AI inventions is likely to involve consideration of whether the additional elements improve the functioning of the relevant computer or other relevant technology. Importantly, the U.S. Guidance stresses the need for the invention to solve a particular problem, and not merely to claim the idea of a solution or outcome that may be achieved using AI.

Application to AI-Assisted Inventions

In Section IV of the U.S. Guidance, it is noted that the subject matter eligibility analysis required under [35 U.S.C. § 101](#) applies equally to inventions created with the assistance of AI, and that this AI assistance is not relevant to the consideration of subject matter eligibility. Further, it reiterates in the U.S. Guidance that AI-assisted inventions are not categorically unpatentable and that such

inventions may be the subject of patent protection where one or more persons have made a significant contribution to the claimed invention.

Comparison of the U.S. Guidance with the UK Guidance and the EU Guidance

There are a number of key similarities in the guidance that were provided by each of the U.S., the UK, and the EU with respect to the patentability of AI inventions, but there are still clear areas of divergence, as noted below. In terms of similarities:

- Each jurisdiction appears to allow AI-assisted inventions to be patented, provided there is a natural person listed as the inventor, and there is evidence to establish that a natural person has made a contribution to the invention (though there may be differences in the nature and extent of the human involvement required to meet this inventorship requirement);
- Each guidance document is intended to supplement existing guidance on the examination of patent applications, rather than providing an entirely new set of patentability criteria applicable to AI inventions;
- Each jurisdiction has indicated that the existing frameworks for assessing the patentability of inventions is fit for purpose in the face of AI inventions and that no specific rules are required to combat the issues that may arise in respect of AI inventions;
- Each guidance document includes some non-binding examples intended to provide concrete fact scenarios to both examiners and patentees, which should be reviewed in detail by patentees;
- Each jurisdiction appears to view as one of the major hurdles to AI inventions the fact they may fall within the categories of excluded subject matter for mathematical methods/concepts or computer programs for which patents will not be granted;
- Each guidance document specifically notes that AI-assisted inventions may be patentable provided they make a technical contribution, with this analysis relying heavily on proof that the patent solves a technical problem in a practical way;
- The mere processing of information by an AI model is unlikely to be sufficient to meet the patentability requirements in any of these jurisdictions; and
- The U.S. Guidance and the UK Guidance both appear to specifically address AI-assisted inventions (agnostic as to subject matter) and to differentiate between these and inventions that are directed to AI subject matter.

On the other hand, there are some notable differences in the approach to patentability evidenced in the guidance documents provided by each of these key jurisdictions. Some of the most noteworthy differences include:

- The UK Guidance and EU Guidance appear to be intended to cover all aspects of patentability that may arise in the context of AI inventions. For example, it includes guidance on not only assessing patentable subject matter for AI-related inventions but also addresses issues relating to sufficiency, whether and to what extent training practices and data sets may need to be disclosed in patent applications and even some guidance on hardware-only implementations of AI inventions (in the UK Guidance). Meanwhile the U.S. approach appears to focus each piece of guidance on a discrete and separate issue, with the "[Inventorship Guidance for AI-Assisted Inventions](#)" directed to issues of inventorship,

and the most recent U.S. Guidance directed to subject matter patentability issues, for example;

- The UK Guidance makes a distinction between Core AI inventions (being inventions directed to AI models and associated technology) and Applied AI inventions (being inventions directed to uses of AI models or methods for implementing AI models), while the EU Guidance and the U.S. Guidance make no such distinction;
- The UK Guidance includes specific guidance on AI hardware, where the EU Guidance and the U.S. Guidance do not specifically address this; and
- Training AI models and the data sets used for this process (including from a sufficiency perspective) are specifically addressed in the UK Guidance and EU Guidance, while the U.S. Guidance does not currently address this. It seems likely that the consideration of these issues by the UK and EU IPOs will be influential on U.S. practice, to the extent applicable.

Conclusion

Ultimately, the general approach taken in the U.S. Guidance, the UK Guidance and the EU Guidance is broadly similar, however only time will tell if the implementation of these guidance documents in the three different jurisdictions results in small (or large) divergences in the decisions made by each IPO on issues of patentability of AI inventions. As mentioned above, the courts however, are taking divergent positions on the same issue, so we can expect more volatility in the months and years to come.

As AI-related technology continues to develop and change, we are sure to see further amendments, updates and expansions in the amount and specificity of the guidance provided by international IPOs across the globe.

Whether the U.S. Guidance is able to achieve its lofty aim of making the U.S. an attractive jurisdiction for R&D investment in and commercialisation opportunities for AI entrepreneurs is yet to be seen, but it is a promising start that there is substantial overlap in the approaches that have been adopted by the U.S., the UK and the EU, given the inherently international nature of AI inventions. As with the UK Guidance, the USPTO has invited stakeholder and industry comments on the U.S. Guidance, the deadline for which will close on 16 September 2024.

Should you have any questions about the implications of the U.S. Guidance, the UK Guidance, the EU Guidance or any other issues surrounding AI inventions, patentability and litigation, please contact Jason Raeburn (jasonraeburn@paulhastings.com) or Natalie Coulton (nataliecoulton@paulhastings.com).



If you have any questions concerning these developing issues, please do not hesitate to contact any of the following Paul Hastings London lawyers:

Jason Raeburn
44.020.3321.1090
jasonraeburn@paulhastings.com

Natalie Coulton
44.020.3023.5232
nataliecoulton@paulhastings.com